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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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BLANK ROME LLP
600 NEW HAMPSHIRE AVENUE, N.W.
WASHINGTON, DC 20037

EXAMINER	
LUCAS, ZACHARIAH	
ART UNIT	**PAPER NUMBER**
1648	

DATE MAILED: 12/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/935,344	JIRA ET AL.	
	Examiner	Art Unit	
	Zachariah Lucas	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-12 is/are pending in the application.

4a) Of the above claim(s) 10-12 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-9 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, wherein the antigen is influenza, in the paper filed on October 22, 2003 is acknowledged. he traversal is on the ground(s) that any of the antigens of claims 2 or 4 can be used to make the claimed compositions, and that all of the groups "relate in some manner to antiviral vaccines." These arguments are not found persuasive. As indicated in the Restriction requirement, the separate inventions and subinventions are both distinct, and the examination of each of them would require be unduly burdensome if the inventions were kept together. The fact that the claimed inventions are all related "in some manner to antiviral vaccines" does not demonstrate that a single search would be sufficient for each of the claimed inventions. Nor does the fact that any of the identified antigens may be used to make a vaccine demonstrate that a single search would be sufficient to examine all of the antigens listed in the claims.

The requirement is still deemed proper and is therefore made FINAL.

2. It is noted that the restriction between the inventions separate inventions identified within claims 2 and 4 are not species, but are separate inventions falling under linking claims (e.g. claim 1). In view of such, examination will be confined to examination of the elected invention and the linking claim unless the linking claim is found to be allowable.

Specification

3. The disclosure is objected to because of the following informalities: on page 54, line 16 of the specification, the application indicates that Table 1 discloses the results of the use of an

anti-HIV test of the claimed composition. However, Table 1, on page 43, discloses the amino acid profile of a typical blood composition. It appears as though the application should refer to Table 3 in this instance.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. These claims read on immunogenic compositions comprising a "reduced viral pathogen." It is not clear from the claims or the specification what is meant by the term "reduced." The Applicant lists on page 29 (lines 9-13) a number of processes that could be considered as processes of reduction. However, the Applicant has not identified any particular structural characteristic of what a reduced pathogen would comprise. Claims 3 and 4 are therefore rejected as indefinite as it is not clear what is encompassed by the claim language.

For the purposes of this action, it is being assumed that the term reduced includes the process of heating or other means of inactivating the pathogen.

6. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the

invention. This claim indicates that among the antigens that may be used in the claimed inventions are fungi influenza viruses. It is not clear what this is intended to refer to. It is suggested that the claim be amended such that the claim identifies fungi and influenza virus as separate sources of the claimed antigen (e.g. by inserting a comma between the term fungi and the term influenza virus).

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 3-9 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for immunogenic compositions comprising an inactivated influenza virus, does not reasonably provide enablement for compositions comprising any viral pathogen. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims. The claims read on broadly on any immunogenic compositions or vaccine comprising any pathogen or inactivated pathogen. The claimed compositions read on compositions comprising live and unattentuated viruses. The Applicant is not enabled for immunogenic compositions, or for compositions for the induction of immunity to a pathogen, that include such virus. This is because the Applicant has not demonstrated that such compositions may be safely administered without causing the infection that the compositions are supposed to be preventing.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Avtushenko et al., J Biotechnol 44: 21-28. The claims have been described above. The reference teaches the administration of a multivalent inactivated influenza vaccine perorally. Page 22. The reference teaches that the vaccine was effective at inducing immunogenic responses. Pages 24-25. The reference therefore anticipates the identified claims.

11. Claims 3-5, and 7-8 are rejected under 35 U.S.C. 102(a) as being anticipated by Barrett et al. (WO 00/47222, see, U.S. Patent 6,635,246 for English translation of the specification of the reference). These claims read broadly on immunogenic compositions comprising a reduced influenza virus (see above), or an immunogen derived from an influenza virus. Barrett teaches a composition for oral or nasal administration comprising an inactivated influenza virus, or an antigen therefrom. See, page 3, third full paragraph (corresponding to the U.S. patent, column 2, lines 39-44). The reference further teaches that the composition may be formulated as a tablet. See, page 6, third full paragraph (U.S. Patent, column 4, lines 1-6). The reference therefore teaches compositions described by the rejected claims.

12. Claims 5-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Waldman et al. (Am J Med Sci 292: 367-71). These claims read on oral immunogenic compositions comprising an influenza antigen. Waldman teaches such a composition on page 368.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Zakay-Rones et al. (WO 97/14434) or Dutcher et al. (U.S. Patent 3,060,094), either of these references in view of Smith et al. (U.S. Patent 6,245,532), or Avtushenko, and further in view of Sokoll et al. (U.S. Patent 6,623,764). Claims 1-9 read on immunogenic compositions formulated for oral administration or as oral pills. The Avtushenko reference has been described above.

Each of Zakay-Rones and Dutcher teach the making and use of a vaccine comprising a heat-inactivated influenza virus. See, Zakay-Rones, abstract; and Dutcher, column 1, and claims 1 and 4. Smith teaches that influenza vaccines commonly comprise antigens of both influenza A and B viruses. Column 2, lines 25-38. Thus, from these teachings, it would have been obvious to those in the art to make a heat inactivated influenza vaccine comprising heat-inactivated virus of both the A and B subtypes. Those in the art would have had a reasonable expectation of success

in the combination as Zakay-Rones teaches that the heat-inactivation may be applied against influenza viruses generally and Dutcher teaches the inactivation of viruses generally, and because the Smith reference indicates that inactivated A and B influenza virus vaccines are known to be effective when combined. However, neither these references, nor Avtushenko, teach the formulation of the described influenza vaccines as oral pills.

Sokoll teaches biodegradable carrier particles for the delivery of immunogenic compositions. See, abstract. The reference further indicates that these carriers may be formulated to deliver antigens, or antigens with an adjuvant through oral immunization routes (see e.g., column 4, lines 5-8), and that the carriers may be formulated in various compositions, including as tablets, pills, and capsules (col. 14, lines 4-13). Sokoll further teaches that among the immunogenic particles that the carriers may be used to deliver are viruses. Column 6, lines 3-24. The reference further indicates that influenza vaccines may be administered orally. Col. 2, lines 12-17. Sokoll does not specifically identify heat-inactivated influenza viruses as an antigen that may be used with the disclosed carriers.

However, because Sokoll does teach that the carriers described therein may be used for the delivery of viruses, and of influenza vaccines, it would be apparent those in the art that the carriers could be used for the delivery of influenza vaccines such as those taught by Zakay-Rones, Dutcher, and Smith, and Avtushenko. Further, as Sokoll teaches that influenza vaccines are effective when administered orally, it would also have been obvious to formulate the vaccines as pills or tablets for oral delivery. There would have been a reasonable expectation of success in the combination because the teachings of Sokoll indicate that the disclosed carriers would be effective for the oral delivery of influenza vaccines, including whole virus (i.e. not

subunit) vaccines. While it is noted that the references do not specifically indicate the claimed percentage (by weight) of immunogen to the pill, such would have been obvious to those in the art as optimization of known methods. The references therefore render the claimed invention obvious.

15. Claims 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sokoll (supra). These claim read on immunogenic compositions comprising an immunogen formulated into a pill. Sokoll has been described above. The reference teaches the formulation of an immunogenic particle (including virus) with a carrier. The reference further indicates that the composition may be formulated in to pills, tablets, and capsules for oral administration. Finally, the reference also indicates that influenza virus is suitable for such administration. Thus, the reference renders obvious the inclusion of an influenza virus and an antigen in a pill for oral administration.

16. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over the teachings of either Barrett as applied above against claims 3-5, 7, and 8, Avtushenko as applied against claim 3-4, or Waldman as applied against claim 5-8. Claim 9 further limits the composition of claim 5 by indicating the immunogen percentage by weight of the claimed pill. While the reference does not teach a specific percentage by weight of the pill comprising the immunogen, such would have been obvious as optimization of a disclosed composition from the teachings of the Barrett or Waldman references.

Conclusion

17. No claims are allowed.

18. The following prior art references are made of record and are considered pertinent to applicant's disclosure. However, while relevant they are also not used as a basis for rejection for the stated reasons.

> Lelie et al., J Med Virol 23 : 297-301. This reference teaches the inactivation of virus through application of heat. The reference also teaches the making of a vaccine through use of such a method. The reference is considered redundant in effect to the teachings of the references applied in the art rejections above.
>
> Eisenthal et al., Viral Immunol, 11:137-45. This reference teaches the use of heat inactivated influenza virus to induce immunologic responses from peripheral blood mononuclear cells. The reference does not explicitly teach the formulation of these viruses into a vaccine composition, although it is unclear whether the heated influenza virus of page 138 could be considered an immunogenic or vaccine composition according to the claims.
>
> Moldoveanu et al., J Infect Dis 167 : 84-90. This reference teaches the oral immunization of mice with a formulation comprising inactivated influenza virus. The teachings of the reference are considered redundant to teachings found in the other references described above.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachariah Lucas whose telephone number is 703-308-4240. The examiner can normally be reached on Monday-Friday, 8 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Housel can be reached on 703-308-4027. The fax phone number for the organization where this application or proceeding is assigned is 703-308-4242.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Z. Lucas
Patent Examiner

JAMES HOUSEL 12/5/03
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600